Policy Rules in the New Economy

William D. Nordhaus, Yale University
Presentation for the Discussion on the New Economy
Sponsored by the Congressional Budget Committee
and the Senate Budget Committee

June 6, 2000

My assignment is to consider the policy implications of the new economy. The basic message is that, whatever our excitement about the new economy, we need to maintain the old-economy virtues in these new-economy times. The new economy has changed some of the numbers and parameters of our economy, but the rules of good economic management are fundamentally unchanged. This holds for budgetary policy as well as for monetary policy.

In my remarks, I will focus primarily on the stance of budget policy. What are the long-term growth prospects? What is the appropriate budget policy in the near term and long term? What are the risks to the economy and the budget? And how should we treat those risks?

What is the new economy?

We hear a great deal about the new economy. What exactly does this term mean? My definition of the new economy is as follows:

> *The new economy involves acquisition, processing and transformation, and distribution of information. The three major components are the hardware (computers) that processes the information, the communications systems that acquire and distribute the information, and the software which with human help manage the entire process.*

Note that some of the so-called new economy is pretty old hat - parts of radio, TV, and telecommunication services date back to the 19th century. The new part is the synergy between computers, software, and communications.

Sometimes, people have in mind what I would call the *brand-new economy*, which is that sector which produces or uses heavily the Internet. While electronic communication dates from the 1960s, the qualitative change in the usage and power of the Internet came with the introduction of the World Wide Web in 1989. So far, however, the Internet doesn't amount to much in the real economy.

INTERNET DOCUMENT INFORMATION FORM

A . Report Title: **Policy Rules in the New Economy**

B. DATE Report Downloaded From the Internet: 03/13/02

C. Report's Point of Contact: (Name, Organization, Address, Office Symbol, & Ph #): **Congressional Budget Office**
Second and D Streets, SW
Washington, DC 20515

D. Currently Applicable Classification Level: Unclassified

E. Distribution Statement A: Approved for Public Release

F. The foregoing information was compiled and provided by:
DTIC-OCA, Initials: __VM__ **Preparation Date 03/13/02**

The foregoing information should exactly correspond to the Title, Report Number, and the Date on the accompanying report document. If there are mismatches, or other questions, contact the above OCA Representative for resolution.

Long term trend growth

The first question concerns the prospects for economic growth in the new economy. For budgetary purposes, it is conventional to look at the growth of potential GDP.

I would suggest that for some purposes we might also examine a concept known as real national income. This measure takes national income (the sum of all factor incomes) and deflates that measure by the CPI. Real national income is a useful supplement to GDP. It is particularly useful for budgetary purposes because depreciation (excluded from national income)is not taxed. In addition, it is useful to deflate with the CPI because CPI-deflated incomes are the real income base for tax purposes and the CPI is the price index used for indexing social security. This measure is statistically more stable than real GDP because there are fewer data revisions to national income and to the CPI. Finally, national income includes the statistical discrepancy, which has risen sharply in the last few years.

The evidence is strong that the growth in our real potential output and income increased sharply in the late 1990s. Figure 1 shows the growth of "wiggly" potential output and income through 1999. (They use three year moving averages and calculate potential output using Okun's Law.) By either measure, the recent growth of potential has been around 3¼ percent per year. This is a significant upturn from the period of 1985-1997, when real CPI-deflated potential national income averaged about 2 percent per year while real potential GDP (on a revised basis) averaged about 2 b percent per year.

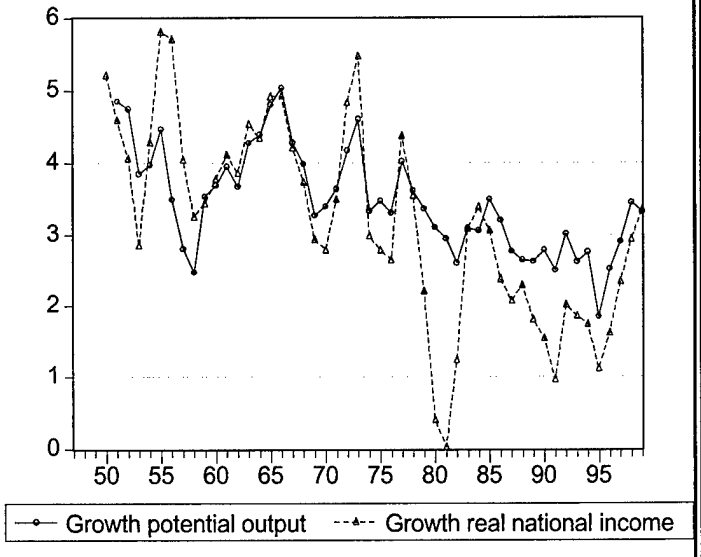

Figure 1. Growth in potential real potential income and real potential output. Estimates are three year moving averages.

Enthusiasts of the new economy often overlook an important point: growth in the new economy is basically returning us to earlier trends. Economic growth over the last three years is higher than in the 1980s and early 1990s, but it is below the trends of most of the postwar period. The new economy is very impressive, but it is narrowly focused in the information technology sectors of the economy, which amount to only about 5 percent of the output and employment.

Those who look carefully at the numbers have determined that most if not all the upturn in trend growth is due to phenomenal productivity growth in the machinery sector of manufacturing, primarily computers. According to estimates by Robert Gordon (known

as the Gordon hypothesis), there has been no rebound in the productivity growth outside of durable manufacturing.

Projections and risks for the budget

Two major issues for long-term budget planning raised by the new economy are: what is the likely trend growth over the next decade, and what are the risks or uncertainties about that projection?

I see no reason not to use the current growth of potential of between 3 and 3½ percent per year as the best guess for the near future. For concreteness, I would set 3¼ percent per year as my central estimate of the growth of potential real income and real output. This is slightly higher than the most recent estimate of the Congressional Budget Office. My estimate is based on the judgment that the recent increases in potential output and income are due largely to improvements in measurement and to technological trends in information technology, neither of which seems about to slow or reverse in the near term.

What about the uncertainty about the long-term trend? Here, I believe there is a natural human tendency to overlook the considerable uncertainty about the long-term trend. To illustrate this point, I constructed overlapping 10-year periods for potential output and real potential national income. I then looked at the dispersion of those ten year growth rates. (See Figure 2, which shows the dispersion of 10-year trends in real potential output.)

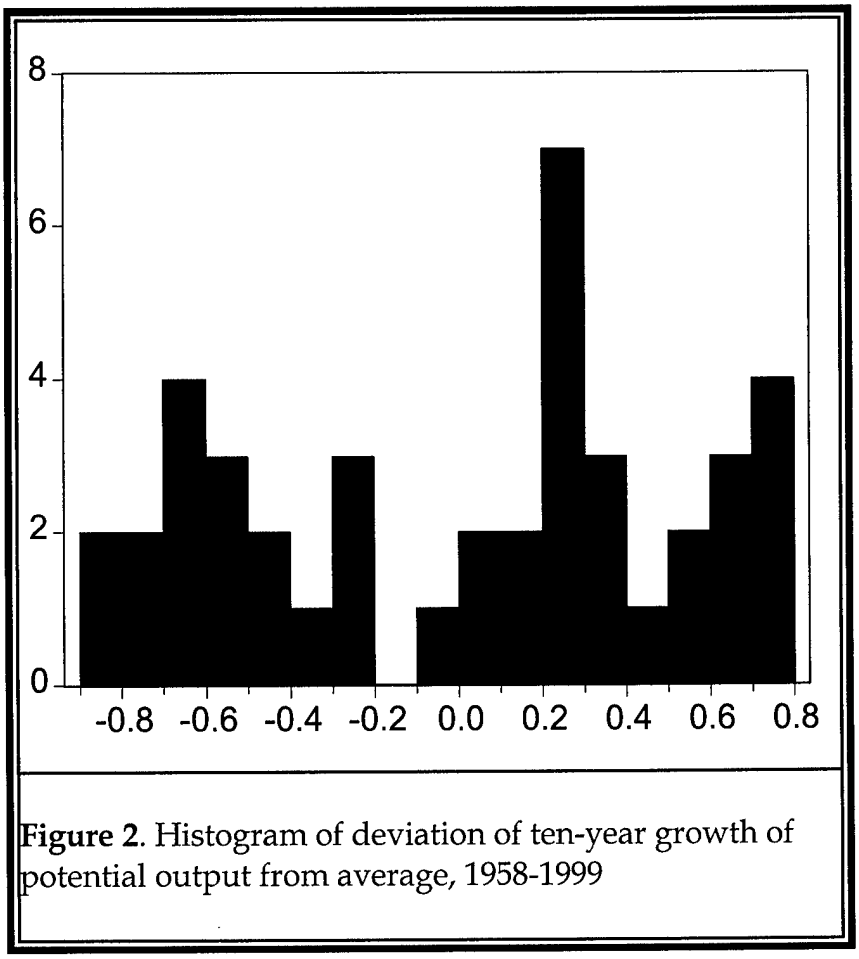

Figure 2. Histogram of deviation of ten-year growth of potential output from average, 1958-1999

The standard deviation of the ten-year growth rates ranged from 0.5 percentage point per year for potential GDP to 1.0 percentage points per year for CPI-deflated real national income. For discussion purposes, I assume that the uncertainty (measured by the standard deviation) is ¾ percentage points per year.

It seems reasonable to use the historical experience as a basis for judging future uncertainties. Based on a central estimate of 3¼

percent per year, history suggests that there is a one-in-three chance that the 10-year real growth in output and incomes will be greater than 4 percent or less than 2½ percent. From a budgetary point of view, the real problem would arise if we make long-term decisions based on the best-guess forecast and then the dice roll against us.

On counting chickens

What are the consequences of making long-term decisions based on highly uncertain long-term projections? Given the inherent uncertainty about the long term income, output, and baseline budget projections, it seems to me foolish to get carried away with "new age" and "new economy" enthusiasm and make long-term budgetary decisions based on rosy forecasts, or even on "best guess" forecasts.

Suppose that we accept the CBO estimates about the long-term budget outlook. In the January budget review, CBO projected a cumulative surplus of $3.2 trillion over the 2001-2010 period if discretionary spending grows with inflation after 2000. I suggested above that there is a one in six chance that economic growth will be ¾ percentage point slower than the best guess over the next decade. Without any corrective policy steps, this change would lead to reduction of the cumulative surplus over the next decade of around $2.5 trillion. Hence the $3.2 trillion would turn into a $0.7 trillion cumulative surplus. The budget trajectory under the CBO baseline and with a one-sigma adverse shock are shown in Figure 3.

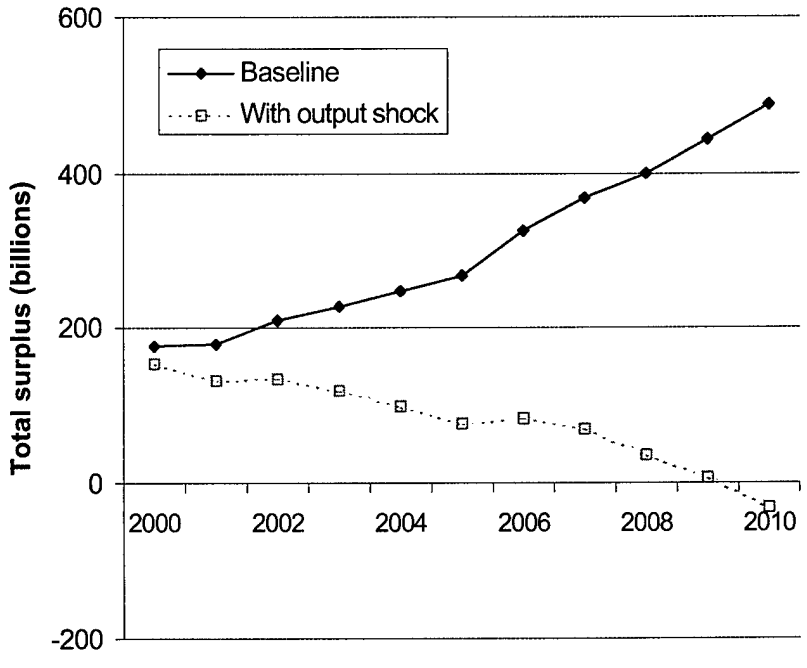

Figure 3. Baseline surplus and surplus with adverse productivity shock

There is no new economy math in this conclusion. The point is an old one familiar, to any experienced budgeteer. It is foolish to make binding long-term decisions based on highly uncertain projections, particularly when the costs of reacting to changes are highly asymmetrical.

I actually think it is prudent to estimate your chickens before they hatch. But it is very foolish to eat them before they are hatched.

Business cycle factors

In addition to the uncertainty about long-term growth trends, three other short-term issues relate to the new economy.

First, there can be little doubt that we are at an extremely favorable business cycle situation. The unemployment rate is low and the utilization of our potential output is high. It is almost certain that growth over the next decade will be somewhat slower than our potential. I would guess we can operate at an average unemployment rate of around 5½ percent over the next decade, which means that the growth rate will be about ¼ percentage point below the trend as the unemployment rate rises. We might do worse if the need for strong anti-inflation policies arises.

Second, and somewhat more speculative, relates to the stock market. There has clearly been a significant component of capital gains in our tax receipts, and some capital gains may even have crept into our national income data. While there are differences of opinion about whether the stock market is overvalued, I assume no one believes that the 21 percent average return over the last six years will be replicated over the next 6 or 12 years. My money is on some negative returns rather than continued high positive returns.

Actually, I would implicate new economy hysteria in the stock market overvaluation. Figure 4 shows estimated price earnings ratios as of May 2000 for new economy firms, new economy firms without the biggest ten (Microsoft, IBM, etc.), and old economy firms. I'm not sure people are aware of the absurdly high valuation of the smaller new economy firms. One of the reasons the new economy gets so much press is that it is a much larger fraction of the stock market than the economy. It is about 5 percent of the economy and 25 percent of stock values. If and when the stock market returns to valuation levels associated with normalcy and sanity, this will tend to reduce effective tax rates below current levels.

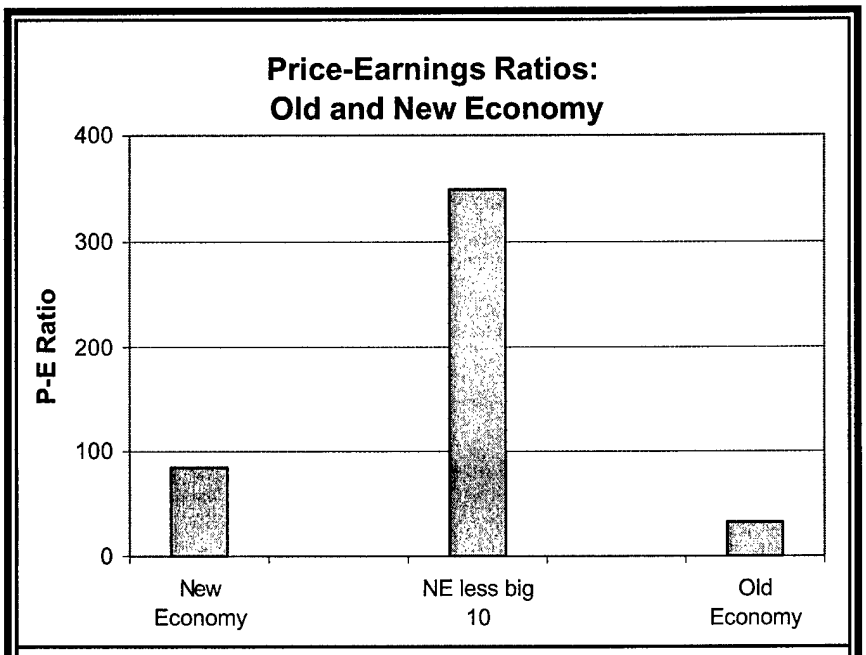

Figure 4. Estimated price-earnings ratios for old and new economy firms

Third, has the business cycle disappeared, or at the least, is it less virulent? There can be little doubt that output has become less volatile over the postwar period (see Figure 5). The reasons are little studied, but probably have to do with the composition of output, improvements in economic management, and absence of major shocks in the 1990s.

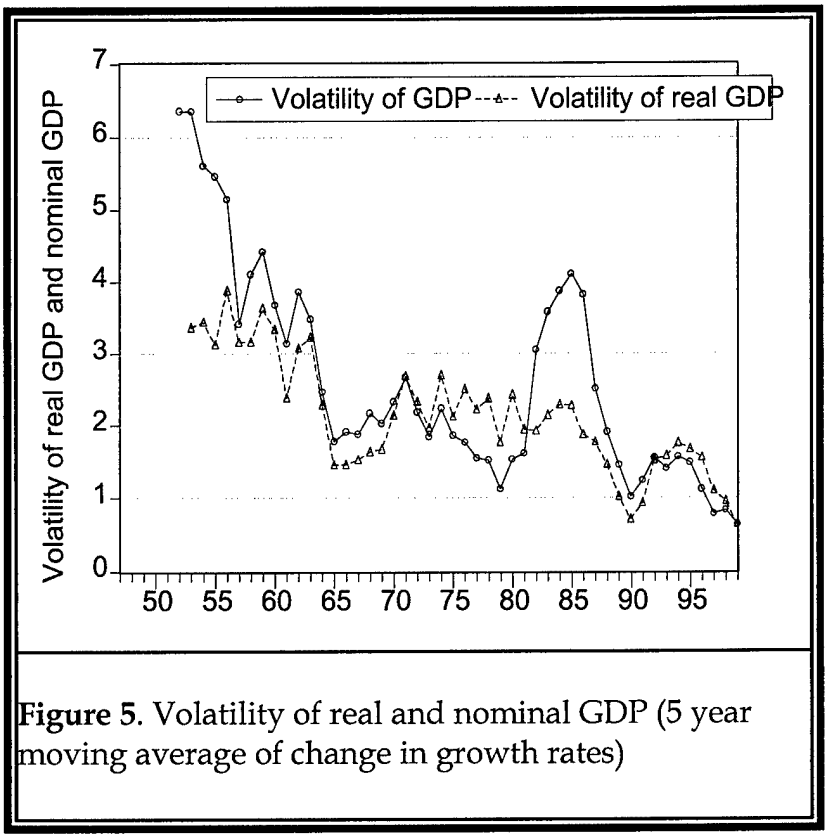

Figure 5. Volatility of real and nominal GDP (5 year moving average of change in growth rates)

I see little reason to believe that the stability is due to the new economy of the 1990s, however. Indeed, if anything, I believe that the new economy is making the economy marginally more unstable because of its effect on asset values and the volatility of the stock market. The combination of high stock values and high volatility of stock prices means that there is likely to be added volatility of aggregate demand through this mechanism.

Summary

In summary, I believe that the new economy, which is the popular name for the impressive trends in information technology, is real and is producing major gains in income, output, and productivity. The gains are to date narrowly concentrated, however, and we just do not know how much the productivity acceleration will spread to other sectors.

In terms of budget policy, the gains mean that real potential income and output are likely to grow around 3 - 3½ percent per year in the near term. We have also enjoyed other favorable macroeconomic trends in the late 1990s - including more stable growth and a declining NAIRU - but these are probably due to other factors.

The most important recommendation is that we should not spend the potential budget surplus before it arrives. History teaches us that reversals of fortune - whether from business cycles, declining trend productivity, or unexpected budget pressures - are our constant companions. To ignore them is to risk plunging the nation into the kind of fiscal nightmare that we experienced for almost two decades after the unhappy fiscal gambles of the early 1980s. I hope that those at the wheel will not repeat that sad episode.